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EXAMINER	
THOMPSON, JAMES A	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/851,164	Applicant(s) KONDO, HIROKAZU	
	Examiner James A. Thompson	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 18-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/210,392.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 17 November 2006 have been fully considered but they are not persuasive. Applicant's arguments are directed to the present amendments to the claims. Applicant is respectfully reminded that, in the course of patent examination, the claims are given the broadest reasonable interpretation consistent with the specification [see MPEP §2111]. Furthermore, limitations from the specification are not read into the claims [see MPEP §2145.VI]. Accordingly, new grounds of rejection are set forth in detail below. Said new grounds of rejection are necessitated by the present amendments to the claims.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 18, 21, 24, 26-28 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Liang (US Patent 5,579,031).**

Regarding claims 18 and 21: Liang discloses an apparatus (figure 6 of Liang) for correcting the color of a print medium (column 10, lines 23-27 of Liang). Figure 7 and figure 8 of Liang are also representations of the same apparatus embodiment (column 4, lines 27-35 of Liang).

Said apparatus comprises:

- color converting means (figure 8(140) of Liang) given to a standard print medium (column 10, lines 30-34 of Liang), for converting device-dependent image data (YMCK – printer 1) to first colorimetric data (Lab) (column 11, lines 4-9 and lines 27-28 of Liang). The output of printer 1 (figure 6(112) of Liang) can be considered the standard print medium since the YMCK color signals are sent directly to printer 1 (column 10, lines 30-34 of Liang). A modeler (figure 8(140) of Liang) transforms the device-dependent YMCK signals of printer 1 to a device-independent CIELab color space (column 11, lines 4-9 and lines 27-28 of Liang).
- color correcting means (figure 6(122); figure 8; and column 4, lines 33-35 of Liang) for converting said first colorimetric data (Lab) to second colorimetric data (L'a'b') (column 11,

lines 36-43 of Liang) to correct the difference between the color of a desired print medium and the color of said standard print medium (column 11, lines 48-58 of Liang). The desired print medium is the output of printer 2 (figure 6(114) of Liang) since the corrected colorimetric data is sent to printer 2 (column 10, lines 34-44 of Liang).

- an image output device (figure 6(114) of Liang) for producing a proof (figure 7(134) of Liang) (column 10, lines 64-67 of Liang) on which the difference between the color of said desired print medium and the color of said standard print medium has been corrected (column 10, lines 37-44 of Liang), on a proof medium based on said second colorimetric data (column 10, lines 41-42 of Liang). A corrected set of YMCK signals (Y'M'C'K') are sent to printer 2 (figure 6(114) of Liang) (column 10, lines 41-42 of Liang). The set of corrected YMCK values are used to create a proof in the form of a set of color patches (figure 7(134) of Liang) on the print medium output by said printer 2 (column 10, lines 64-67 of Liang). The corrected set of YMCK signals is based on said second colorimetric data (L'a'b') since said second colorimetric data is converted to a device-dependent YMCK color space for printing (column 11, lines 48-58 of Liang).
- that said color correcting means corrects the data based on the ratios of X_a/X_0, Y_a/Y_0 and Z_a/Z_0, where X_a, Y_a and Z_a are second colorimetric data values and X_0, Y_0 and Z_0 are first colorimetric data values for which the difference between the color of a desired print medium and the color of said standard print medium has been corrected (column 10, line 67 to column 11, line 9 of Liang). A colorimetric measuring device (figure 7(36) of Liang) measures the color patches (figure 7(132,134) of Liang) output from both printers (column 10, line 67 to column 11, line 1 of Liang) in CIELab color space (column 11, lines 4-6 of Liang). Said measurements are used to compile transfer functions in lookup tables (column 11, lines 2-3 of Liang) that are then used to construct models (figure 8(140,142) of Liang) (column 11, lines 6-9 of Liang). If the L*a*b* CIELab color space values are represented by the variables X_0, Y_0 and Z_0 for the first printer and X_a, Y_a and Z_a for the second printer, then the transfer function values stored in said lookup tables are represented by X_a/X_0, Y_a/Y_0 and Z_a/Z_0 since the transfer functions simply relate the value at one printer to the value at the other printer (column 11, lines 2-3 of Liang).
- each of the first and second colorimetric data each comprise device-independent color spaces (L*a*b* and L'*a'*b'*) and the correcting means operates on said device independent color spaces (figure 3 and column 7, lines 6-19 of Liang).

Further regarding claim 18: The apparatus of claim 21 performs the method of claim 18.

Regarding claim 24: Liang discloses a proofer (figure 6 of Liang) for generating a color proof on a proof print medium (figure 7(132) of Liang) (column 10, lines 64-67 of Liang) having color different from the color of a desired print medium (column 10, line 67 to column 11, line 3 of Liang). The compilation of a transfer function between the two printers (column 11, lines 2-3 of Liang) inherently implies that the colors corresponding to the same CMYK values are different.

Said proofer comprises:

- a color adjusting device (figure 6(122) of Liang) for adjusting the difference between the color of said desired print medium and the color of a standard print medium (column 10, lines 34-44 of Liang). The adaptor (figure 6(122) of Liang) is a device comprised of several elements (column 10, lines 35-37 of Liang). Said elements work to convert the CMYK values for printer 1 (figure 6 (112) of Liang) into the CMYK values for printer 2 (figure 6(114) of Liang) (column 10, lines 37-44 of Liang).
- said color adjusting device adjusts color proof data based on the ratios of X_a/X_0, Y_a/Y_0 and Z_a/Z_0, where X_a, Y_a and Z_a are colorimetric data values for producing a proper color on said desired print medium and X_0, Y_0 and Z_0 are colorimetric data values producing the proper color on said standard print medium (column 10, line 67 to column 11, line 9 of Liang). A colorimetric measuring device (figure 7(36) of Liang) measures the color patches (figure 7(132,134) of Liang) output from both printers (column 10, line 67 to column 11, line 1 of Liang) in CIELab color space (column 11, lines 4-6 of Liang). Said measurements are used to compile transfer functions in lookup tables (column 11, lines 2-3 of Liang) that are then used to construct models (figure 8 (140,142) of Liang) (column 11, lines 6-9 of Liang). If the L*a*b* CIELab color space values are represented by the variables X_0, Y_0 and Z_0 for the first printer and X_a, Y_a and Z_a for the second printer, then the transfer function values stored in said lookup tables are represented by X_a/X_0, Y_a/Y_0 and Z_a/Z_0 since the transfer functions simply relate the value at one printer to the value at the other printer (column 11, lines 2-3 of Liang).
- an output device (figure 6(114) of Liang) generating the color proof based on results of the color adjusting device (column 10, lines 37-44 of Liang), wherein each of the first and second colorimetric data each comprise device-independent color spaces (L*a*b* and L'*a'*b'*) and the correcting means operates on said device independent color spaces (figure 3 and column 7, lines 6-19 of Liang).

Regarding claim 26: Liang discloses that said color adjusting device adjusts color by using a colorimetric data which is determined by colorimetrically measuring the color of said desired print medium with a colorimeter (figure 7(36) of Liang) (column 10, line 67 to column 11, line 3 of Liang). A colorimeter is used to measure the color patches of each printer (column 10, line 67 to column 11, line 1 of Liang) and use the colorimetric data to determine the difference between the color patches in order to create the transfer functions of the two printers (column 11, lines 2-6 of Liang).

Regarding claim 27: Liang discloses a printing profile (figure 8(140,142) of Liang), wherein said color adjusting device adjusts color by a color converting means (figure 6(122) and figure 8 of Liang) behind said printing profile (column 11, lines 48-58 of Liang). The color converting means (figure 6(122) of Liang) is shown in detail in figure 8 of Liang (column 4, lines 33-35 of Liang). Said color converting means is used to adjust the color of the proofer (column 11, lines 48-58 of Liang) using the models for each printer (figure 8(140,142) of Liang) (column 11, lines 6-9 of Liang).

Regarding claim 28: Liang discloses a synthetic color converting means (figure 8 of Liang) at least combining said printing profile (figure 8(140,142) of Liang), a color converter for adjusting color (figure 8(176) and column 11, lines 54-58 of Liang), and a printer profile (figure 8(128) and column 10, lines 37-42 of Liang), for correcting color (column 10, lines 34-44 of Liang).

Regarding claim 49: Liang discloses that the color of a standard print medium is represented as a first device-independent color space (figure 8(168) and column 11, lines 38-42 of Liang) and the color of the desired print medium represents a conversion of data of said first device-independent space (column 11, lines 48-58 of Liang).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-2, 7-8 and 45-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US Patent 5,579,031) in view of Ng (US Patent 5,185,661).**

Regarding claims 1 and 7: Liang discloses an apparatus (figure 6 of Liang) for correcting the color of a print medium (column 10, lines 23-27 of Liang). Figure 7 and figure 8 of Liang are also representations of the same apparatus embodiment (column 4, lines 27-35 of Liang).

Said apparatus comprises:

- color converting means (figure 8(140) of Liang) given to a standard print medium (column 10, lines 30-34 of Liang), for converting device-dependent image data (YMCK – printer 1) to first colorimetric data (Lab) (column 11, lines 4-9 and lines 27-28 of Liang). The output of printer 1 (figure 6(112) of Liang) can be considered the standard print medium since the YMCK color signals are sent directly to printer 1 (column 10, lines 30-34 of Liang). A modeler (figure 8(140) of Liang) transforms the device-dependent YMCK signals of printer 1 to a device-independent CIELab color space (column 11, lines 4-9 and lines 27-28 of Liang).
- color correcting means (figure 6(122); figure 8; and column 4, lines 33-35 of Liang) for converting said first colorimetric data (Lab) to second colorimetric data (L'a'b') (column 11, lines 36-43 of Liang) to correct the difference between the color of a desired print medium and the color of said standard print medium (column 11, lines 48-58 of Liang). The desired print medium is the output of printer 2 (figure 6(114) of Liang) since the corrected colorimetric data is sent to printer 2 (column 10, lines 34-44 of Liang).
- an image output device (figure 6(114) of Liang) for producing a proof (figure 7(134) of Liang) (column 10, lines 64-67 of Liang) on which the difference between the color of said desired print medium and the color of said standard print medium has been corrected (column 10, lines 37-44 of Liang), on a proof medium based on said second colorimetric data (column 10, lines 41-42 of Liang). A corrected set of YMCK signals (Y'M'C'K') are sent to printer 2 (figure 6(114) of Liang) (column 10, lines 41-42 of Liang). The set of corrected YMCK values are used to create a proof in the form of a set of color patches (figure 7(134) of Liang) on the print medium output by said printer 2 (column 10, lines 64-67 of Liang). The corrected set of YMCK signals is based on said second colorimetric data (L'a'b') since said second colorimetric data is converted to a device-dependent YMCK color space for printing (column 11, lines 48-58 of Liang).
- said color correcting means comprises one-dimensional lookup tables (figure 8(142) of Liang) for converting said first colorimetric data to said second colorimetric data (column 11, lines 20-26 and lines 42-43 of Liang).

- each of the first (Lab) and second (L'a'b') colorimetric data each comprise device-independent color spaces (as is well-known in the art, CIELab colorimetric data is device-independent).

Liang does not disclose expressly that the converting of the first colorimetric data to second colorimetric data includes a direct conversion between the first and second colorimetric data.

Ng discloses directly converting between first and second colorimetric data (figure 6 and column 4, lines 50-58 of Ng).

Liang and Ng are combinable because they are from the same field of endeavor, namely color gamut transformation between two different digital color reproduction devices. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to directly convert between said first (Lab) and said second (L'a'b') colorimetric data, as taught by Ng. The motivation for doing so would have been to improve the overall processing speed of the system taught by Liang. By performing a direct conversion between the device-independent color spaces of each device, faster conversion will be achieved than by using the more complicated set of calculations taught by Liang. Therefore, it would have been obvious to combine Ng with Liang to obtain the invention as specified in claims 1 and 7.

Further regarding claim 1: The apparatus of claim 7 performs the method of claim 1.

Regarding claims 2 and 8: Liang discloses an apparatus (figure 6 of Liang) for correcting the color of a print medium (column 10, lines 23-27 of Liang). Figure 7 and figure 8 of Liang are also representations of the same apparatus embodiment (column 4, lines 27-35 of Liang).

Said apparatus comprises:

- gradation converting means (figure 6(10) of Liang) for converting the gradation of device-dependent image data with respect to each color in order to match desired printing conditions (column 10, lines 28-33 of Liang). The workstation (figure 6(10) of Liang) converts the stored digital color values for each pixel of a color image into CMYK values for a color printer (column 10, lines 28-33 of Liang). Since said CMYK values go straight to printer 1 (figure 6(112) of Liang) for printing (column 10, lines 33-34 of Liang), then the gradation must inherently be corrected for by said workstation in order for printer 1 to be capable of printing the image.
- color converting means (figure 8(140) of Liang) corresponding to standard printing conditions given to a standard print medium (column 10, lines 30-34 of Liang), for converting the gradation-converted device-dependent image data (YMCK – printer 1) to first colorimetric data (Lab) (column 11, lines 4-9 and lines 27-28 of Liang). The output of printer 1 (figure 6(112) of Liang) can be considered the standard print medium since the YMCK color signals are sent directly to printer 1 (column 10, lines 30-34 of Liang). A modeler (figure 8(140) of Liang) transforms the

device-dependent YMCK signals of printer 1 to a device-independent CIELab color space (column 11, lines 4-9 and lines 27-28 of Liang).

- color correcting means (figure 6(122); figure 8; and column 4, lines 33-35 of Liang) for converting said first colorimetric data (Lab) to second colorimetric data (L'a'b') (column 11, lines 36-43 of Liang) to correct the difference between the color of a desired print medium and the color of said standard print medium (column 11, lines 48-58 of Liang). The desired print medium is the output of printer 2 (figure 6(114) of Liang) since the corrected colorimetric data is sent to printer 2 (column 10, lines 34-44 of Liang).
- an image output device (figure 6(114) of Liang) for producing a proof (figure 7(134) of Liang) (column 10, lines 64-67 of Liang) on which the difference between the color of said desired print medium and the color of said standard print medium has been corrected (column 10, lines 37-44 of Liang), on a proof medium based on said second colorimetric data (column 10, lines 41-42 of Liang). A corrected set of YMCK signals (Y'M'C'K') are sent to printer 2 (figure 6(114) of Liang) (column 10, lines 41-42 of Liang). The set of corrected YMCK values are used to create a proof in the form of a set of color patches (figure 7(134) of Liang) on the print medium output by said printer 2 (column 10, lines 64-67 of Liang). The corrected set of YMCK signals is based on said second colorimetric data (L'a'b') since said second colorimetric data is converted to a device-dependent YMCK color space for printing (column 11, lines 48-58 of Liang).
- each of the first (Lab) and second (L'a'b') colorimetric data each comprise device-independent color spaces (as is well-known in the art, CIELab colorimetric data is device-independent).

Liang does not disclose expressly that the converting of the first colorimetric data to second colorimetric data includes a direct conversion between the first and second colorimetric data.

Ng discloses directly converting between first and second colorimetric data (figure 6 and column 4, lines 50-58 of Ng).

Liang and Ng are combinable because they are from the same field of endeavor, namely color gamut transformation between two different digital color reproduction devices. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to directly convert between said first (Lab) and said second (L'a'b') colorimetric data, as taught by Ng. The motivation for doing so would have been to improve the overall processing speed of the system taught by Liang. By performing a direct conversion between the device-independent color spaces of each device, faster conversion will be achieved than by using the more complicated set of calculations taught by Liang. Therefore, it would have been obvious to combine Ng with Liang to obtain the invention as specified in claims 2 and 8.

Further regarding claim 2: The apparatus of claim 8 performs the method of claim 2.

Regarding claims 45-48: Liang discloses that the first and second colorimetric data each comprise device-independent color spaces (figure 8(164,168) and column 11, lines 38-47 of Liang). A first set of L*a*b* colorimetric values are produced from the YMCK color space of printer 1 (figure 8(168) and column 11, lines 38-42 of Liang). A second set of L*a*b* colorimetric values are produced from the YMCK color space of printer 2 (figure 8(164) and column 11, lines 38-43 of Liang). These two L*a*b* colorimetric spaces are used to convert from one printer to another (column 11, lines 43-47 of Liang). CIELab color spaces are well known in the art to be device-independent color spaces.

6. **Claims 3-6, 9-12, 29-31, 33-35, 37-39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US Patent 5,579,031) in view of Ng (US Patent 5,185,661) and Keating (US Patent 5,619,434).**

Regarding claims 3, 4, 9 and 10: Liang discloses that said color correcting means is generated by outputting color patches (column 10, lines 64-67 of Liang), whose colorimetric values are varied in a colorimetric color space (YMCK) (column 10, lines 50-63 of Liang), with said image output device (figure 6(112) of Liang), and comparing the color of the desired print medium with the colors of the color patches on the proof medium (column 10, line 67 to column 11, line 6 of Liang).

Liang in view of Ng does not disclose expressly that said colorimetric values are varied about the color of the standard print medium.

Keating discloses defining a central colorimetric value (column 9, lines 8-12 of Keating) about which colorimetric values are varied (column 9, lines 13-18 of Keating).

Liang in view of Ng is combinable with Keating because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the colors of the color patches in a color space on a print medium, as taught by Liang, about a particular desired color sample, as taught by Keating. The motivation for doing so would have been to calibrate the printers (figure 7(112,114) of Liang) by varying the colors in an acceptable range about the color of the medium (column 9, lines 18-21 of Keating). Therefore, it would have been obvious to combine Keating with Liang in view of Ng to obtain the invention as specified in claims 3, 4, 9 and 10.

Regarding claims 5, 6, 11 and 12: Liang in view of Ng does not disclose expressly that said color patches outputted on said proof medium comprise color patches whose colorimetric values L*a*b* are varied in a CIELAB color space about the color of said standard print medium.

Keating discloses that said color patches have colorimetric values L*a*b* which are varied in a CIELAB color space (column 9, lines 13-18 of Keating).

Liang in view of Ng is combinable with Keating because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the colors of said color patches about the color of said standard print medium, as discussed in the arguments regarding claims 3, 4, 9 and 10, using colorimetric values L*a*b* which are varied in a CIELab color space, as taught by Keating. The motivation for doing so would have been that CIELab values are a useful color space with which to measure color appearance (column 1, lines 16-25 of Keating). Therefore, it would have been obvious to combine Keating with Liang in view of Ng to obtain the invention as specified in claims 5, 6, 11 and 12.

Regarding claims 29, 33, 37 and 41: Liang in view of Ng does not disclose expressly that a color of a central color patch is the same as a color of the standard print medium.

Keating discloses varying colors around a central color (column 9, lines 13-18 of Keating), which is to be printed on a cloth print medium (column 8, lines 3-5 of Keating).

Liang in view of Ng is combinable with Keating because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the color patches printed on the proofing sheet, as taught by Liang, about a central color representative of a central color for a print medium, as taught by Keating. The motivation for doing so would have been to try to match the color of a medium within a particular acceptable color range (column 9, lines 13-17 of Keating). Therefore, it would have been obvious to combine Keating with Liang in view of Ng to obtain the invention as specified in claims 29, 33, 37 and 41.

Regarding claims 30, 34, 38 and 42: Liang in view of Ng does not disclose expressly that the color patches comprise three-dimensional colorimetric values of L*a*b* and color patches are arranged as a*-b* planes in respective cross sections of different L*-axis values.

Keating discloses using a color space for color comparison that comprise three-dimensional colorimetric values of L*a*b* (figure 6 and column 9, lines 38-44 of Keating). Said colorimetric values are arranged in an ellipsoid (column 9, lines 13-17 of Keating). Along the L*-axis of said ellipsoid are a*-b* plane cross-sections at each different value of L* (figure 6 of Keating). Keating further teaches correction by specifically incrementing the lightness value (column 11, lines 52-66 of Keating) and assigning a set of a*-b* values for each lightness value (column 12, lines 39-44 of Keating).

Liang in view of Ng is combinable with Keating because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use three-dimensional L*a*b* colorimetric values with a*-b* plane cross sections for different L*-values, as taught by Keating, for arranging the printing of the color patches, as taught by Liang. The motivation for doing so would have been that printing is performed by printers (figure 7(112,114) of Liang) which print on a medium that is inherently two dimensional, but color variations in all three colorimetric dimensions must be analyzed (column 11, lines 13-17 of Liang). Therefore, it would have been obvious to combine Keating with Liang in view of Ng to obtain the invention as specified in claims 30, 34, 38 and 42.

Regarding claims 31, 35, 39 and 43: Liang in view of Ng does not disclose expressly that each color patch is assigned an integer as a relative position from the central color patch according to each axis of L*a*b* for showing increment/decrement intervals of a colorimetric value and the color of the desired print medium is compared with the color patches, and wherein when no color patch is the same as the color of the desired print medium, a value between two closest color patches which is close to the color of the desired print medium is described as a real number to describe a colorimetric value of the desired print medium.

Keating discloses varying color values in a three-dimensional L*a*b* color space (column 9, lines 38-44 of Keating) defined by an ellipsoid (figure 6 and column 9, lines 13-17 of Keating). The central value of said ellipsoid is the desired value for the color correction process (column 9, lines 13-21 of Keating). Keating further teaches correction by specifically incrementing the L*-value (column 11, lines 52-66 of Keating), with a*-b* plane cross sections at each L*-value (figure 6 of Keating), and assigning a set of a*-b* values for each L*-value (column 12, lines 39-44 of Keating). Each L*-value with an assigned a*-b* plane cross section is assigned a specific integer (figure 9 and column 11, lines 35-40 of Keating) according to the relative position from the central L*-value for showing increment/decrement intervals of the corresponding colorimetric value (column 11, lines 25-34 of Keating). Said a*-b* values are also assigned in an array (column 12, lines 39-44 of Keating) about the non-central L*-value (column 12, lines 34-35 of Keating) which is the same as assigning integers for said a*-b* values in order to show increment/decrement intervals of the corresponding colorimetric values, since the subscripts corresponding to the a*-b* array values are inherently integers based upon the ordering of said a*-b* values.

Liang in view of Ng is combinable with Keating because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a

person of ordinary skill in the art to output color patches for the purpose of color correction and interpolate values not specifically corrected for, as taught in Liang; for a set of L*a*b* colorimetric values with each represented L*-, a*-, and b*-value denoted by integers showing increment/decrement intervals, as taught by Keating. It would be natural and obvious to place the central L*a*b* value as the center patch since the other L*a*b* values are varied around said central value. The motivation for doing so would have been to store representative data points in computer memory for later recall (column 9, lines 18-24 and lines 30-35 of Keating). Therefore, it would have been obvious to combine Keating with Liang in view of Ng to obtain the invention as specified in claims 31, 35, 39 and 43.

7. **Claims 19-20, 22-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US Patent 5,579,031) in view of Keating (US Patent 5,619,434).**

Regarding claims 19 and 22: Liang discloses that said color correcting means is generated by outputting color patches (column 10, lines 64-67 of Liang), whose colorimetric values are varied in a colorimetric color space (YMCK) (column 10, lines 50-63 of Liang), with said image output device (figure 6(112) of Liang), and comparing the color of the desired print medium with the colors of the color patches on the proof medium (column 10, line 67 to column 11, line 6 of Liang).

Liang does not disclose expressly that said colorimetric values are varied about the color of the standard print medium.

Keating discloses defining a central colorimetric value (column 9, lines 8-12 of Keating) about which colorimetric values are varied (column 9, lines 13-18 of Keating).

Liang is combinable with Keating because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the colors of the color patches in a color space on a print medium, as taught by Liang, about a particular desired color sample, as taught by Keating. The motivation for doing so would have been to calibrate the printers (figure 7(112,114) of Liang) by varying the colors in an acceptable range about the color of the medium (column 9, lines 18-21 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 19 and 22.

Regarding claims 20 and 23: Liang does not disclose expressly that said color patches outputted on said proof medium comprise color patches whose colorimetric values L*a*b* are varied in a CIELAB color space about the color of said standard print medium.

Keating discloses that said color patches have colorimetric values L*a*b* which are varied in a CIELAB color space (column 9, lines 13-18 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the colors of said color patches about the color of said standard print medium, as discussed in the arguments regarding claims 19 and 22, using colorimetric values L*a*b* which are varied in a CIELab color space, as taught by Keating. The motivation for doing so would have been that CIELab values are a useful color space with which to measure color appearance (column 1, lines 16-25 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claims 20 and 23.

Regarding claim 25: Liang discloses that said proofer (figure 6 of Liang) outputs said proof medium having color patches whose colors are varied (column 10, lines 60-67 of Liang), and said color adjusting device (figure 6(122) of Liang) adjusts color by visually comparing the colors of the patches on said desired print medium (output of printer 1 (figure 7(112) of Liang)) with the colors of said color patches on said proof medium (output of printer 2 (figure 7(114) of Liang)) (column 10, line 67 to column 11, line 3 of Liang). The colors of the two media are visually compared with a colorimeter (figure 7(36) of Liang) in order to compile transfer functions between the two printers (column 10, line 67 to column 11, line 3 of Liang).

Liang does not disclose expressly comparing the color patches of the proof medium specifically to the color of the desired print medium.

Keating discloses comparing a range of colors (column 9, lines 13-21 of Keating) with the color of a cloth print medium (column 8, lines 3-5 of Keating).

Liang and Keating are combinable because they are from the same field of endeavor, namely color correction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compare the colors of the color patches on the proof medium, as taught by Liang, to the color of a medium, as taught by Keating. The motivation for doing so would have been to simulate a particularly colored medium for the outputs (column 3, lines 22-30 of Keating). Therefore, it would have been obvious to combine Keating with Liang to obtain the invention as specified in claim 25.

8. **Claims 32, 36, 40 and 44 rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (US Patent 5,579,031) in view of Ng (US Patent 5,185,661), Keating (US Patent 5,619,434), and Dundas (US Patent 5,604,567).**

Regarding claims 32, 36, 40 and 44: Liang in view of Ng and Keating does not disclose expressly that a color difference ΔE in adjacent color patches on each axis of L*a*b* has a value between 1.5 and 2.0, inclusive.

Dundas discloses that color adjustment is performed for both fine and coarse difference ranges between adjacent color patches arranged about the central color patch (figure 9 and column 9, lines 15-20 of Dundas), depending on the range of color adjustment needed (column 9, lines 16-19 of Dundas). This is a more general and adaptable range definition than a color difference ΔE between 1.5 and 2.0, inclusive. A color difference ΔE between 1.5 and 2.0, inclusive, would be used for specific cases of color correction since ΔE between 1.5 and 2.0, inclusive, is a small perturbation in color values.

Liang in view of Ng and Keating is combinable with Dundas because they are from the same field of endeavor, namely color correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to vary the color patches in a L*a*b* color space, as taught by Liang in view of Ng and Keating; using both fine and coarse color difference ranges, such as ΔE between 1.5 and 2.0 (inclusive) for adjacent patches, as taught by Dundas. The motivation for doing so would have been to incrementally observe color differences so that the color can be adjusted to a desired color (figure 9 and column 8, lines 37-47 of Dundas). Therefore, it would have been obvious to combine Dundas with Liang in view of Ng and Keating to obtain the invention as specified in claims 32, 36, 40 and 44.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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01 February 2007

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